Vehicle Miles Traveled: Measurement

How is VMT measured in Washington State?

The statewide vehicle miles traveled (VMT) total is calculated from traffic counts taken on state, county, and city roadways. This information is used to meet Federal Highway Administration (FHWA) reporting requirements as part of the Highway Performance Monitoring System (HPMS). HPMS divides roadways into 12 functional[1] classes and traffic into four vehicle classes. Traffic counts performed as part of the planning and design processes are also used in the state VMT calculation. Federal guidelines dictate how this information is collected and reported. These guidelines are necessary because VMT and total lane miles are two factors FHWA uses to determine the distribution of funding among the states.

Traffic is continuously counted and classified at nearly 160 permanent data collection sites in the state. The Washington State Department of Transportation (WSDOT) rotates about 2,000 sampling sites on a three-year cycle. The sampling sites represent a cross-section of functional class and traffic volume categories. About 30 of the permanent sites have the ability to weigh the vehicle as part of the classification process. The other permanent sites and the temporary sites use the distance between axles to determine vehicle size and type. Thirteen vehicle classes are counted. These classes are grouped into four categories for reporting to FHWA. Counters can easily distinguish between sedans and large trucks; however, accurately distinguishing between similarly sized vehicles is more difficult, e.g., large pick up trucks and utility/delivery trucks may get misclassified due to their similar characteristics.

In addition, 132 cities and 36 counties collect traffic counts on their roads and report this information to WSDOT. Last year the response rate was about 94 percent. Three counties do not report because their principle arterials are state highways. Some cities do not have the staff and equipment to adequately count traffic on their roadways every three years. These jurisdictions provide best estimates where direct counts are not available.

WSDOT calculates the statewide VMT based on roadway miles and traffic count data from WSDOT, counties, and cities. VMT is reported on a calendar year basis. Differences from one year to the next are not clear indicators of changes in driving behavior. Five-year periods are the minimum time period over which trends can be identified.

At the state level, VMT is a good indicator of the actual miles traveled. This accuracy holds down to the county level. Below the county level, it is very difficult to accurately assess VMT. Because VMT reflects activity across the roadway network, it is not a useful measure at the project level.

What are current VMT measurement best practices?

The most accurate way to quantify the state's VMT would be to require odometer readings at the time of vehicle registration renewal. This would include all travel by vehicles registered in the state of Washington, including out-of-state travel.

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[1] Function class explanation is available at: http://www.wsdot.wa.gov/mapsdata/tdo/functionalclass.htm, Highway Performance Monitoring System Field Manual, Item 17 http://www.fhwa.dot.gov/ohim/hpmsmanl/chapt4.htm, WSDOT Design Manual http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm,

The equipment needed to count vehicles varies depending on the traffic conditions. Stop and go traffic conditions require more sophisticated equipment than free flow conditions. Radar, sensors in the road, and cameras are three types of technology that are used to count and classify vehicles. Price ranges from several hundred to tens of thousands of dollars. Many vendors offer a wide variety of equipment.

How can we meet the reporting requirements of ESSHB 2815?

Approach	Agency	Advantage	Disadvantage
Require odometer readings as part of vehicle registration process	Department of Licensing	-Most accurate -Could evaluate effect of localized or sector specific strategies -Good way to measure a statewide aggregate	-Require new reporting system -Accuracy of readings reported -Even though the most accurate, may not be to see trends at less than 5 years
Survey sample of vehicle owners for annual odometer readings	WSDOT	-Select vehicles in areas to match need for information to evaluate localized strategies	-Requires new system to capture data -May not work for all strategies
Use current vehicle count system	WSDOT	-System in place and recognized -Good way to measure statewide aggregate -Consistent, national approach -Can measure 5-years trends	-Difficult to evaluate localized strategies -Not accurate below the county level

Discussion Items

- Should we continue using the current Highway Performance Management System (HPMS) VMT data to monitor statewide VMT?
- Should we consider surveying selected residents for odometer readings as needed to evaluate effects of local or sector strategies?
- Should we, and if so, how would we account for out of state travel by Washington residents and in state travel by non-Washington residents if we use an actual per person measure such as the odometer reading?
- Do we want to measure strategy by strategy and if so what should our approach be?

Addition questions/considerations:

- What is the per capita baseline? ESSHB 2815 identifies the 75 billion as the total VMT to use as a baseline, but not a population number to use. What are the actual VMT numbers that we are striving to reach?
- How do VMT reductions relate to GHG reduction goals?
- What percentage of the state's total VMT is from vehicles less than 10,000 pounds?